

The impact of the COVID-19 pandemic on the access to speech-language-hearing outpatient procedures of the Brazilian Unified Health System

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ABSTRACT

Purpose: to analyze the percentage variation in the indicator of access to speech-language-hearing procedures in the Unified Health System, during the pandemic.

Methods: an ecological study carried out through outpatient productions made available in the Outpatient Information System of the Unified Health System, from 2019 to 2021. Outpatient productions were grouped into Health Promotion and Prevention Actions (01); Procedures with Diagnostic Purposes (02); Clinical Procedures (03); and Orthoses, Prosthetics, and Special Materials (07) per year and region of Brazil. The data were processed by TabNet, and access indicators were calculated, tabulated, and displayed on a thematic map.

Results: the indicators of access to outpatient speech-language-hearing procedures decreased from 2019 to 2020 and increased in 2021, though still below the 2019 productions. The Southeast region had the greatest reduction in the supply indicator, and health promotion and prevention actions had the greatest reduction among procedure groups. The North region was the only region that maintained the pattern in access indicators in 2021, in relation to 2019.

Conclusion: the access to procedures decreased in almost all Brazilian regions and procedure groups.

Keywords: Health Services Accessibility; Speech Therapy; Unified Health System; Pandemics; COVID-19

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INTRODUCTION

In recent years, the speech-language-hearing (SLH) services of the Brazilian Unified Health System (SUS, in Portuguese) have been increasingly required to provide quality service, according to the SUS principles¹.

Hence, SLH activities take place in healthcare networks, aiming to ensure comprehensive care². Healthcare networks are a set of actions and services articulated per complexity level based on their technological densities, such as primary care, secondary care, and tertiary care³. Secondary care is responsible for diagnostic procedures and therapeutic and/or medication assistance, bridging healthcare networks, and receiving demands from other levels⁴. Therefore, secondary care plays a rather important role.

The SUS Outpatient Information System (SIA/SUS) aims to provide data to make the country's productions known and, thus, support health decision-making⁴. As it records the care provided, it is possible to measure the indicators of the population's access to health services in general, including SLH therapy.

This study approaches access as the real use of health services, characterized by provision – i.e., the possibility of using them when necessary, which makes them the core of health system functioning⁵.

Few studies in Brazil address the distribution and supply of SLH professionals, especially at SUS⁶⁻⁸, which indicates that many difficulties still need to be overcome. Sousa and collaborators⁹, in a study with data from the SUS IT Department, showed a heterogeneous increase in the supply of SLH pathologists at SUS, highlighting an unequal expansion of supply between the Federative Units. Moreover, the use of secondary data such as SIA/SUS poses limitations, due to coverage problems.

SLH disorders increased with the pandemic, due to complications associated with COVID-19. The lack of socialization and the absence of children from education further increased this demand. Also, the post-COVID syndrome has been recurrently discussed, revealing a high prevalence of vocal and swallowing complaints⁹⁻¹².

Thus, the current demand for health services with these additional new cases may point to greater difficulties in accessing SLH pathologists, especially in medium complexity at SUS. In contrast, no research highlights the impact of the pandemic on access to SLH procedures at SUS, and there are no estimates on

which regions or groups of procedures had the greatest reduction.

Therefore, this study aimed to analyze the percentage variation in the indicator of access to SLH procedures at SUS, during the pandemic.

METHODS

According to Resolution no. 510/16 of the National Health Council, research using public domain information does not need to be evaluated by the CEP/CONEP system.

This is an ecological epidemiological study, whose units of analysis were the five macro-regions of Brazil. The data were collected between June and August 2022 and refer to the period from January 2019 to December 2021. It used outpatient productions generated from the databases of the Brazilian Institute of Geography and Statistics (IBGE) and SIA/SUS, via DATASUS.

The study included all outpatient productions in the Brazilian Occupation Classification associated with SLH pathologists (0795; 223810; 223815; 223820; 223825; 223830; 223835; 223840), grouped according to procedures, as follows: Health Promotion and Prevention Actions (01); Procedures with Diagnostic Purposes (02); Clinical Procedures (03); and Orthoses, Prosthetics, and Special Materials (07). The results were categorized per year and region of Brazil, namely: North, Northeast, Midwest, Southeast, and South.

The impact was analyzed with the indicator of access to SLH procedures at SUS (APFSUS), based on other studies that explore SIA/SUS secondary data and use the population in the denominator to make different units of analysis comparable⁸, using the following formula:

$$APFSUS = \frac{(\text{No. of outpatient productions in year X in region X})}{(\text{Population in year X in region X})} \times 10^6 \text{ inhabitants}$$

Inhabitants

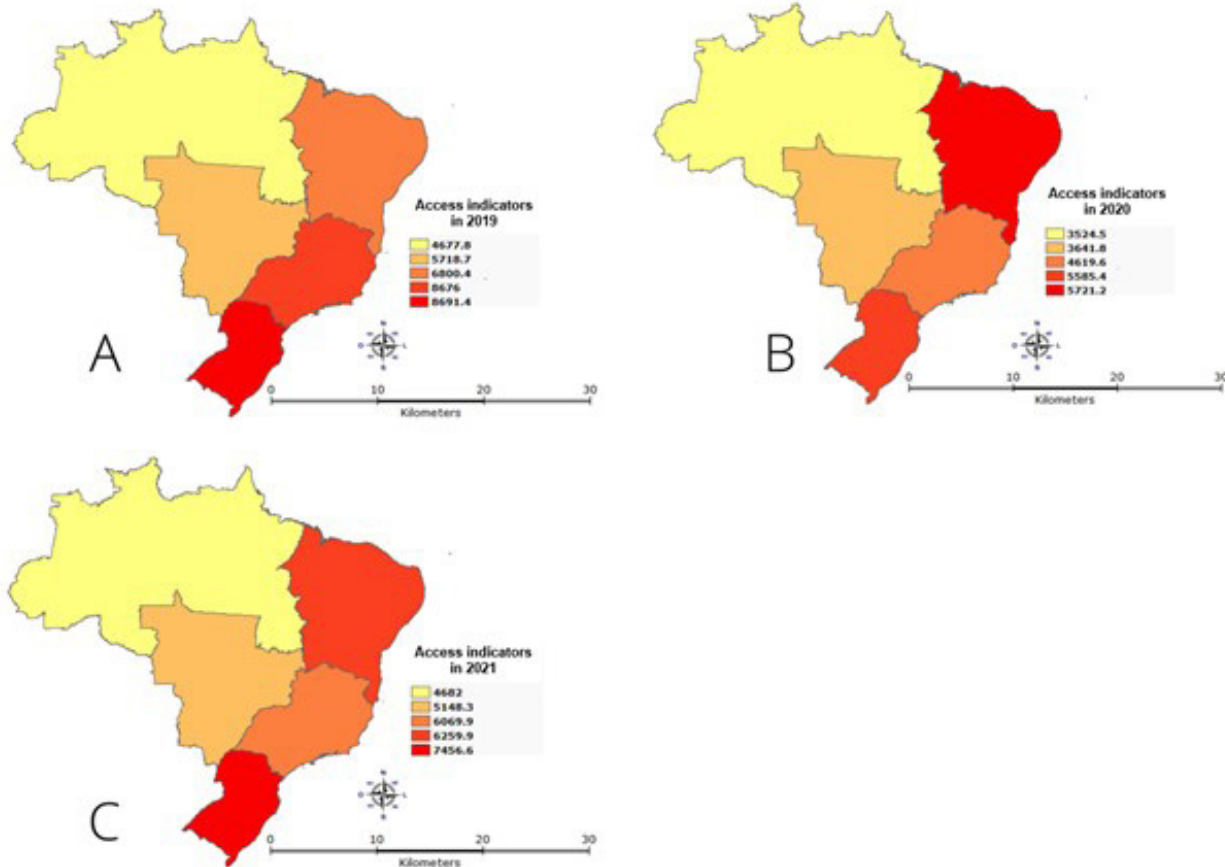
The comparative analysis of access to SUS SLH procedures was based on the percentage variation, using the year 2019 as a reference. The collected data were processed by DATASUS TabNet, tabulated, and organized for descriptive analysis using Microsoft Excel, version 2010, in the Windows 10 operating system. Thematic maps were created for spatial distribution of the indicator, using Terraview software, version 4.2.2, available for free download on the Internet.

RESULTS

Among the years studied, 2019 had the highest record of productions, with an indicator of access of 7,585.4/10⁵ inhabitants. The biggest reduction, and consequently the lowest record, was in 2020, with an

indicator of access of 4,887.4/10⁵inhab, with a -35.57% variation.

The regions most affected in 2020, compared to 2019, were the Southeast (-46.75%) and South (-35.74%). The least affected ones were the Northeast (-15.87%) and North (-24.65%).



A) Coefficient of access to outpatient procedures associated with speech-language-hearing therapy (according to the Brazilian Occupation Classification) at SUS in 2019 per 100,000 inhabitants; B) Coefficient of access to outpatient procedures associated with speech-language-hearing therapy (according to the Brazilian Occupation Classification) at SUS in 2020 per 100,000 inhabitants; C) Coefficient of access to outpatient procedures associated with speech-language-hearing therapy (according to the Brazilian Occupation Classification) at SUS in 2021 per 100,000 inhabitants.

Source: Developed by the authors, based on the SUS Outpatient Information System. Data accessed in August 2022.

Figure 1. Spatial distribution of the indicators of access to speech-language-hearing outpatient procedures in the Unified Health System, Brazil, 2019-2021

The biggest percentage variations among Brazilian regions from 2019 to 2021 were in the Southeast (-30.04%) and South (-14.21%). The lowest ones were in the North (+0.09%) and Northeast (-9.95%). The North was the only region that maintained a standard among access indicators in 2021 in relation to 2019.

The comparison of percentage variations in 2020 and 2021 highlights a greater increase in the

South (5,585.4/10⁵inhab – 7,456.6/10⁵inhab) and Midwest (3,641.8/10⁵inhab – 5,148.3/10⁵inhab) and a smaller increase in the Northeast (5,721.2/10⁵inhab – 6,259.9/10⁵inhab) and North (3,524.5/10⁵inhab).

The spatial distribution of access indicators showed a greater concentration in the South and Southeast in 2019, and in the South and Northeast in 2020 and 2021 (Figure 1).

Table 1. Distribution of the number of speech-language-hearing outpatient procedures in the Unified Health System, access indicator and percentage variation, Brazil, 2019-2021

Region	Procedure	Year							
		2019		2020		2021		Δ APFSUS 2019-2020	Δ APFSUS 2019-2021
		N	APFSUS/105	N	APFSUS/105	N	APFSUS/105		
North	Health Promotion and Prevention Actions	24232	131.9	7241	39.0	5628	30.0	-70.43%	-77.26%
	Procedures with Diagnostic Purposes	348854	1898.7	305362	1643.2	362188	1927.9	-13.46%	1.54%
	Clinical Procedures	475965	2590.5	332962	1791.8	500275	2663.0	-30.83%	2.80%
	Ortheses, Prosthetics, and Special Materials	10440	56.8	9395	50.6	11488	61.2	-10.92%	7.75%
	Total	859491	4677.8	654960	3524.5	879579	4682.0	-24.65%	0.09%
Northeast	Health Promotion and Prevention Actions	33933	58.6	22490	38.7	32766	56.1	-33.96%	-4.27%
	Procedures with Diagnostic Purposes	1155573	1996.4	820607	1410.6	1078256	1844.6	-29.34%	-7.60%
	Clinical Procedures	2706144	4675.2	2454788	4219.7	2507384	4289.6	-9.74%	-8.25%
	Ortheses, Prosthetics, and Special Materials	40645	70.2	30418	52.3	40721	69.7	-25.50%	-0.71%
	Total	3936295	6800.4	3328303	5721.2	3659127	6259.9	-15.87%	-7.95%
Southeast	Health Promotion and Prevention Actions	702946	798.1	47697	53.8	59069	66.3	-93.26%	-91.69%
	Procedures with Diagnostic Purposes	2224183	2525.4	1404312	1585.0	1733723	1945.7	-37.24%	-22.95%
	Clinical Procedures	4570769	5189.8	2539901	2866.7	3482891	3908.6	-44.76%	-24.69%
	Ortheses, Prosthetics, and Special Materials	143288	162.7	101132	114.1	133066	149.3	-29.87%	-8.24%
	Total	7641186	8676.0	4093042	4619.6	5408749	6069.9	-46.75%	-30.04%
South	Health Promotion and Prevention Actions	19995	66.6	11202	37.1	9751	32.1	-44.29%	-51.80%
	Procedures with Diagnostic Purposes	852376	2837.8	602469	1993.5	714353	2349.9	-29.75%	-17.19%
	Clinical Procedures	1674396	5574.6	1028175	3402.1	1483211	4879.2	-38.97%	-12.47%
	Ortheses, Prosthetics, and Special Materials	63789	212.4	46164	152.8	59399	195.4	-28.06%	-8.00%
	Total	2610556	8691.4	1688010	5585.4	2266714	7456.6	-35.74%	-14.21%
Midwest	Health Promotion and Prevention Actions	13784	84.6	6912	41.9	14259	85.4	-50.47%	0.95%
	Procedures with Diagnostic Purposes	345893	2122.9	235091	1425.1	335814	2011.5	-32.87%	-5.25%
	Clinical Procedures	540901	3319.7	336878	2042.1	475691	2849.4	-38.49%	-14.17%
	Ortheses, Prosthetics, and Special Materials	31207	191.5	21877	132.6	33729	202.0	-30.76%	5.48%
	Total	931785	5718.7	600758	3641.8	859493	5148.3	-36.32%	-9.97%
Brazil	Health Promotion and Prevention Actions	794890	377.3	95542	45.1	121473	56.9	-88.05%	-84.92%
	Procedures with Diagnostic Purposes	4926879	2338.8	3367841	1588.0	4224334	1979.2	-32.10%	-15.38%
	Clinical Procedures	9968175	4731.9	6692704	3155.8	8449452	3958.7	-33.31%	-16.34%
	Ortheses, Prosthetics, and Special Materials	289369	137.4	208986	98.5	278403	130.4	-28.31%	-5.09%
	Total	15979313	7585.4	10365073	4887.4	13073662	6125.2	-35.57%	-19.25%

Captions = N: Number, APFSUS/105: Access to speech-language-hearing procedures at SUS per 100,000 inhabitants, Δ: percentage variation.

Source: Developed by the authors, based on the SUS Outpatient Information System. Data accessed in August 2022.

Analyzing per procedure group, the highest access indicators in Brazil in 2019 were in Clinical Procedures (4,731.9/10⁵inhab), followed by Procedures with Diagnostic Purposes (2,338.8/10⁵inhab). The smallest ones in the same year were Health Promotion and Prevention Actions, and Orthoses, Prosthetics, and Special Materials in the Northeast (58.6/10⁵inhab and 70.2/10⁵inhab), South (66.6/10⁵inhab and 212.4/10⁵inhab), and Midwest (84.6/10⁵inhab and 191.5/10⁵inhab). The groups are inverted in the North and Southeast, in that the smallest access indicators were respectively Orthoses, Prosthetics, and Special Materials (56.8/10⁵inhab and 162.7/10⁵inhab) and Health Promotion and Prevention Actions (131.9/10⁵inhab and 798.1/10⁵inhab).

In 2020, the indicators of access to Clinical Procedures (3,155.8/10⁵inhab) and Procedures with Diagnostic Purposes (1,588.0/10⁵inhab) were the greatest ones in the regions of the country, whereas the smallest ones in all regions were Health Promotion and Prevention Actions (45.1/10⁵inhab) and Orthoses, Prosthetics, and Special Materials (98.5/10⁵inhab). The procedure groups decreased in all regions in relation to 2019 – the most affected one was Health Promotion and Prevention Actions, and the least affected was Procedures with Diagnostic Purposes.

The access indicators maintained the same behavior pattern in 2020-2021. In comparison with 2019, the population had the greatest restriction to Health Promotion and Prevention Actions and the least restriction to Orthoses, Prosthetics, and Special Materials. All 2021 indicators increased compared to 2020, though not returning to 2019 levels.

DISCUSSION

The study showed a decreased access to outpatient SLH services at SUS between 2019 and 2021, which encompassed the COVID-19 pandemic. A public health emergency was declared in Brazil in February 2020¹³, requiring measures to prevent, control, and contain risks, damages, and injuries, such as social isolation shortly after.

The year 2020, the beginning of the pandemic, was the most affected in terms of access because outpatient care was temporarily canceled. Silva et al.¹⁴ recorded the impact of the COVID-19 pandemic on the volume of care in a tertiary hospital, with a significant decline in the amount of elective care. Hence, it can be assumed that other areas of activity outside the outpatient setting,

were also affected by the pandemic and its measures to contain the spread of the virus.

The spatial distribution of access indicators to outpatient SLH procedures at SUS in 2019 was concentrated in the South and Southeast. According to Sousa and collaborators⁸, the regions with the highest concentration (supply) of SLH pathologists are those with the highest access indicators.

However, due to the considerable reduction in outpatient SLH procedures in the South and Southeast in 2020, the Northeast emerged with the highest concentration of access indicators. Furthermore, considering that the Southeast had a slower growth rate in the supply of procedures in 2021, it was the most affected region in access to these procedures at SUS, compared to the others in the study period.

Clinical Procedures had the highest access indicator in all regions, which may be related to the fact that it encompasses a greater diversity of procedures, including individual and group consultations and therapies from different areas of SLH therapy¹⁵.

The lowest access to SLH procedures at SUS was in the North, whose indicators were as low as almost half of those found for Brazil. Regarding the distribution of SLH outpatient costs in Brazil, Santos¹ shows that the fewest resources were allocated to the North (2009-2018), which would be due to its fewer inhabitants, thus influencing the lower production of procedures¹⁶.

The North is likewise the most affected region in terms of the concentration of SLH pathologists, as socioeconomic inequality obstacles make it difficult to expand and provide the necessary health services. These inequalities in access to outpatient SLH procedures in the Brazilian territory are a warning for SUS managers when planning actions, as the supply of post-COVID-19 rehabilitation services must be expanded, given the increase in demand for rehabilitation.

Health Promotion and Prevention Actions and Orthoses, Prosthetics, and Special Materials were the procedure groups with the lowest indicators in all regions. However, even before the pandemic and its distancing regulations, both groups were already following a downward trend. Furthermore, Health Promotion and Prevention Actions, as they are mostly group activities, may have had a generally decreased production due to not only isolation measures but also the organizational adaptations of Family Health Units facing the new reality¹⁷. Group activities, as individual ones, are extremely important to reduce damage and

prevent injuries, promoting greater biopsychosocial quality for users.

The measures taken during this period drained the multidisciplinary at SUS. This included the establishment of “*Previne Brasil*” (“Prevention, Brazil”), which extinguished the accreditation and financing of the Expanded Family Health and Primary Care Center (NASF-AB)¹⁸. Thus, administrators could decide not to maintain these teams, possibly helping reduce the production of outpatient procedures, including those for health promotion and prevention that were observed in this study. NASF-AB is knowingly a significant healthcare network strategy, an important tool for comprehensive, regional, and expanded attention for primary healthcare users¹⁹.

It must be clarified that discussions about the implementation and actions of the Care Network for People with Disabilities had already reached a stalemate regarding access, equity, and comprehensiveness of care^{20,21}. Melo²² demonstrates a tendency to reduce the financing of health policies and programs for people with disabilities regarding Orthoses, Prosthetics, and Special Materials as early as 2012 to 2019. In this sense, decreased financial investment, coupled with redirected resources due to the public calamity situation in the country, may have helped further restrict access to these procedures during the pandemic.

Carvalho and collaborators²³ compared primary healthcare rehabilitation actions for people with disabilities in Brazil. They showed that the North Region had a significant increase in the number of referrals for orthoses, prostheses, and auxiliary devices between 2015 and 2018, in relation to other regions of the country. The fact that the North has seen an increase in the production of Orthoses, Prosthetics, and Special Materials can be linked to the already existing upward trend.

Lima²⁴ mapped orthopedic workshops and characterized orthoses, prostheses, and mobility aids offered by the SUS in 2019. She points out that the budgetary impact analysis demonstrated an irregular and unpredictable provision in the process. This means that there is a variation in the supply of orthoses, prostheses, and mobility aids, with irregular arrival of resources, affecting the users who need them.

The greater mobilization of this professional class and the regulation of SLH teletherapy during this period^{25,26} made teleconsultation a healthcare alternative, maintaining SLH assistance in times of pandemic²⁶⁻³⁰. This achievement may have been an

important agent to improve the 2021 indicators, which might have been worse than those found, with results like those of 2020. Hence, teleconsultation may have helped improve the production percentage variation, minimizing the impact of the pandemic.

Health service data to plan strategic actions must be even more accurate and timely during a pandemic. Nevertheless, despite the importance of health information systems for health diagnosis, their full potential in decision-making (including the need to increase human resources) is still underused³¹.

Lastly, the limitations^{32,33} of the study include the fact that the SUS Health Information Systems have a latency period for receiving new data, which hindered the inclusion of 2022 data. Therefore, the study period must be expanded to include 2022 and 2023 to understand the post-pandemic behavior of indicators of other non-emergency health procedures.

CONCLUSION

The findings indicate a decreased access to SLH procedures at SUS between 2019 and 2021, which includes the period of the COVID-19 pandemic, mostly in all procedure groups in the Regions of Brazil, except for the North one.

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Authors' contributions:

EES: Conceptualization; Data curation; Data analysis; Writing – Original draft; Writing – Review & editing.

MRBV: Data curation; Data analysis; Writing – Review & editing.

PRO: Conceptualization; Data curation; Writing – Review & editing.

CMBN: Conceptualization; Writing – Review & editing.

MLLTL: Supervision; Conceptualization; Data curation; Data analysis; Writing – Review & editing.

Data sharing statement:

The data for this research were obtained from the Datasus website, organized and processed by the researchers, and can be made available for a period of up to five years. The data contain aggregated information, and it is not possible to identify participants, individually. To access the data kept by the researcher, interested parties should send an email to the following email addresses: edla.silva@ufpe.br or maria.ftlima@ufpe.br